WHAT IS CLAIMED IS:

1. A plasma processing method for supplying an electric power to a first electrode, making a first electrode have a ground potential, or making a first electrode have a floating potential while supplying gas to a plasma source arranged in a vicinity of an object to be processed at a pressure in a vicinity of an atmospheric pressure, the method comprising processing a part of the object to be processed with a plasma, while supplying an electric power to at least one of the first electrode and the second electrode, in a state where an area of a surface of a potentially controlled second electrode arranged in a position opposite to the plasma source via the object to be processed is made superposed on the object to be processed smaller than an area of a surface of the plasma source superposed on the object to be processed.

2. The plasma processing method as claimed in claim 1, wherein the second electrode is constructed of a plurality of electrodes, and the object to be processed is processed with a plasma into a configuration to be processed by selectively potentially controlling the respective microelectrodes.

3. The plasma processing method as claimed in claim 1, wherein the second electrode is constructed by arranging a plurality of potentially controlled electrodes, and the

object to be processed is processed with a plasma into configuration to be processed by selectively bringing arbitrary microelectrodes close to the object to be processed.

4. The plasma processing method as claimed in claim 1, wherein the object to be processed has a substrate or a thin film of a volume resistivity of not smaller than 10^{-6} (Ω·cm).

5. The plasma processing method as claimed in claim 1, wherein the object to be processed has a substrate or a thin film of a volume resistivity of not smaller than 10^{-8} (Ω·cm).

6. The plasma processing method as claimed in claim 1, wherein positions of the plasma source and the potentially controlled second electrode are displaced relatively to the object to be processed.

7. The plasma processing method as claimed in claim 1, wherein the gas includes at least any one of inert gases of He, Ar, Ne, and Xe.

8. The plasma processing method as claimed in claim 1, wherein the gas includes a gas of CxFy (x and y are natural numbers) such as SF_6, and CF_4, NF_3, O_2, Cl_2, or a halogen containing gas of HBr or the like as reactive etching gas.

9. A plasma processing apparatus comprising:

a plasma source provided with a potentially controllable or floating potential first electrode arranged in a processing chamber;

a gas supply unit;

a power supply unit for supplying an electric power to the first electrode;

a potentially controllable second electrode in a position opposite to a plasma source via a position where an object to be processed is to be arranged in the chamber; and

an electric power supplying device for supplying an electric power to at least one of the first electrode and the second electrode,

wherein an area of a surface of the second electrode superposed on the object to be processed is made smaller than an area of a surface of the plasma source superposed on the object to be processed.

10. The plasma processing apparatus as claimed in claim 9, wherein the potentially controllable second electrode comprises an electrode unit of a plurality of electrodes and capable of selectively potentially controlling the respective electrodes.

11. The plasma processing apparatus as claimed in claim 9, wherein the potentially controllable second electrode comprises an electrode unit of a plurality of

potentially controlled electrodes and capable of selectively bringing electrodes close to the object to be processed.

12. The plasma processing apparatus as claimed in claim 9, further comprising a moving device capable of displacing positions of the plasma source and the potentially controllable second electrode relatively to each other.